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AN OVERVIEW OF THE FAA'S INTERACTIVE VIDEO TELETRAINING PROGRAM

ABSTRACT

The FAA Academy delivers technical training and related support services for the agency and other aviation organizations, both domestic and international. Academy personnel develop and conduct technical training courses, both resident and nonresident, in the areas of regulatory standards and compliance, airway facilities, air traffic control, airports programs, logistics, acquisition management, and civil aviation security. The FAA Academy uses a multi-disciplined approach to distance learning.

The first approach is the use of computer-based instruction (CBI). This area of distance learning is responsible for distributing the CBI training material that each of the Academy's instructional divisions develop.

Interactive Video Teletraining (IVT) uses a modern interactive video studio in conjunction with a satellite up-link to provide a means for FAA and other government agencies to deliver cost-effective, just-in-time training.

The Correspondence Study Program maintains a variety of text-based correspondence study courses that are still very effective and appropriate today.

This paper will only discuss the IVT approach to distance learning.

EXPANDING THE USE OF IVT

The FAA's technical training budget has experienced significant cuts since 1992. This dramatic reduction in the training budget resulted in the percentage of FAA employees receiving training dropping approximately 41 percent. During the same period the FAA was directed by the National Partnership for Reinventing Government (NPR) to reduce the size of the agency by about 11 percent. This downsizing resulted in fewer FAA employees doing more with less while the mission of the agency remained unchanged. The problem facing the FAA was finding ways to reduce the overall cost of providing training while increasing the training opportunities for employees.

To meet this challenge, the agency developed an Interactive Video Teletraining (IVT) Program to supplement the existing distance learning media - correspondence study and multimedia computer-based training. The IVT program was developed to provide high quality, highly interactive training to geographically dispersed employees, thus reducing the agency's dependency on expensive centralized resident based training.

The FAA's Aviation Training Network

Interactive Video Teletraining (IVT) was implemented in 1995, with the installation of a satellite-based system at the FAA Academy in Oklahoma City. By utilizing

IVT, the FAA has implemented a more cost-effective training method that: trains students at or near job site; increases quality of work life by decreasing time away from home; reduces travel costs; reduces cost of training while providing more training opportunities; increases access to primary training resources and expertise; ensures a consistent training message; provides cost-effective quality training in a timely manner to the FAA's changing workforce; provides training for career advancement and personal growth; and provides a forum for up-to-date information distribution and exchange.

The IVT system features: one-way video/two-way audio; touch screen controls; "off-the-shelf" video technology; and is instructor driven with the assistance of a studio director. It supports a variety of training aids (i.e., videotapes, computer graphics, CD-ROM, hard copy graphics, slides, and actual objects projected and enlarged via an overhead camera) and a viewer response system utilizing keypads with built-in microphones, quizzing capability, and a "Flag" key to anonymously alert the instructor of student confusion.

With 36 operational downlink sites across the country, the FAA network is readily accessible to approximately 60 percent of the FAA population within 25 miles of an FAA downlink site.

To date, the IVT Program Office has broadcast 694 hours of training to 5920 students at 1060 sites. Users include Aircraft Certification, Security, Airports, Air Traffic, Airway Facilities, Accounting, CMD, Flight Standards, Aviation Medicine, and Office of Civil Rights.

Using IVT the agency has saved millions

of dollars in travel costs by transmitting essential information quicker, keeping agency personnel abreast of important changes related to aircraft inspections, security, and other issues. Recently there have been two broadcasts of time sensitive information: FAA Headquarters Office of Human Resource Management broadcast on the new Personnel Policy Manual to all the region's and center's Human Resource Management Offices and the Office of Aviation Security three day broadcast on Compliance and Enforcement's new EIR procedures to 363 field agents. Using traditional FAA Academy resident training for the EIR course would have required all 363 field agents to travel to Oklahoma City. Estimated cost per participant using IVT was \$18.03.

Expansion of the ATN is continuing with 24 more downlink sites scheduled to become operational by September 1999. With a total of 60 downlink sites, approximately 70 percent of the FAA population will be within 25 miles of an FAA downlink site.

Second channel capability is also being added to 33 of the receive sites located at the FAA's Regional Offices and Air Route Traffic Control Centers. With this capability, the FAA's Public Affairs Office can broadcast the FAA Administrator's Town Hall meetings and other general information broadcasts to these 33 sites simultaneously with training broadcasts.

IVT capability has also been made available to other government agencies (federal, state, and local) interested in distance learning via ATN. There have been a total of 73 broadcast turns for other agencies using the FAA up-link site at the FAA Academy since December 1995.

The IVT Program Office has reimbursable agreements with the General Services Administration, the U.S. Department of Agriculture's Graduate School, the Veterans Benefits Administration, and Central Missouri State University. These agreements allow these agencies to use our excess channel capacity to uplink their digital broadcasts to their downlink sites from their own facilities or to use our studio to broadcast to those sites. We are also able to receive analog broadcasts from these agencies and send those broadcasts back out digitally to their sites.

FAA is considered a leader in distance learning, with companies such as American Express, General Motors, and GE Capital Services, along with other government agencies such as Social Security, Federal Judicial Center, and U.S. Fish and Wildlife, having benchmarked the FAA's IVT Program.

FAA is an active participant in the Federal Government Distance Learning Association and the United States Distance Learning Association, promoting interagency sharing of resources, technology, and knowledge.

Inter-Agency Learning Resource Sharing

FAA created the Government Alliance for Training and Education (GATE) to promote the sharing of IVT resources across government agencies. The Government Education and Training Network (GETN) is the vehicle for sharing between these agencies. GETN is a satellite network based on the unique collaboration between 20 Federal Government agencies (including the Department of Defense) encompassing over 1,100 downlink sites, 13 up-link sites, and over 8000 hours annual programming. The agencies

involved in GETN share receive sites, which greatly increases each agency's capability to broadcast to a widely disbursed group of employees. GATE has also sponsored and sent training needed government-wide to as many as 600 GETN sites and over 7,600 employees.

GETN uses a one-way video/two-way audio, satellite-based (GE-3), fixed site, Ku-band, digital transmission comprised of 13 fixed digital up-links with 26 video channels available and 1000+ fixed digital downlink sites located throughout the CONUS, Alaska and Hawaii. The system is operated and maintained, under the FTS 2000 Wideband Video Transmission Service (WVTS) Digital Satellite Compression Feature (DSCF) contract, by GE/GILAT Spacenet Services, Inc., and is completely compatible with twenty Federal Government civilian agencies and the Department of Defense resident on the satellite. This unique network allows for these government agencies to share training resources, including facilities and programming. As a result of this unique collaboration, training and education resources have been leveraged to allow significant reduction in student costs and subsequent savings to the taxpayer. Additionally, the GETN allows for responsive training provided to government employees on such topics as veterans and social security benefits, retirement, and other timely information.

The Department of Defense (DOD) agencies in the GETN include: the Air Force with 4 up-links and 144 downlinks; the Air National Guard, 3 up-links and 198 downlinks; the Army Training and Support Center (ATSC) with 1 up-link and 82 downlinks; the Defense Equal Opportunity Management Institute (DEOMI) with 1 up-link; the Defense Systems Information

Agency (DISA) with 20 downlinks; the Defense Logistics Agency (DLA) with 34 downlinks (expanding to 60) with terrestrial connectivity from 4 origination sites to 2 military up-links; and other DOD agencies such as NAVAIR, Air Force Reserve Command and the Defense Systems Management College (DSMC).

The Federal government civilian agencies in the GETN include: the Veterans Benefits Administration (VBA), with 63 downlinks; the Federal Aviation Administration (FAA), 1 up-link and 34 downlinks (expanding to 60); the Department of Energy (DOE), 1 up-link and 24 downlinks; the Environmental Protection Agency (EPA) with a shared up-link [located at North Carolina State] and 124 downlinks; the Internal Revenue Service (IRS) with 1 up-link and 130 downlink sites; the U.S. Fish and Wildlife Service (F&WS) with 1 up-link and 10 downlinks; the US Courts with 205 downlinks (expanding to 250) and connectivity (analog fiber) to the Air National Guard Up-link; and other agencies such as the GSA, Nuclear Regulatory Commission (NRC), and the US Coast Guard with 13 downlinks [ISDN connectivity to the DEOMI up-link].

Possible Expansion of IVT to Other Government Agencies

Because other government agencies are facing budget cuts and don't have similar distance learning capabilities and there is some excess capacity on the FAA uplink site and training studio, it is possible to offer IVT services to other government agencies on a cost reimbursable and availability basis. Expansion of the service to other government agencies could reduce agency costs and utilize available capacity on the FAA system. It would also

eliminate the need for other government agencies to acquire their own system.

Expanding the IVT program to other government agencies will require changing training paradigms. It's about changing the mindset of decision-makers that view traditional instructor led resident training as the only media for training employees. For most managers, the only perspective they have of training comes from their experiences with traditional resident training courses. The picture they need to see is one in which training is viewed as an integral part of the workday, rather than a special event separated from work - where training is delivered in short, concise blocks that can be applied on the job immediately. In short, they need to view training as being conducted only when needed, just enough to perform the job, and in close proximity to the workplace.

CONCLUSIONS

The challenges facing the FAA IVT Program office are: 1) Continue to satisfy FAA executives, managers, and first-line supervisors, as well as other government agencies, that training can be done differently from the traditionally accepted resident classroom-training model, while maintaining the same quality of learning outcomes. Several FAA course comparisons have been completed along with the results of hundreds of other published studies comparing satellite-based training with classroom training as proof that there is no difference in the quality of training between IVT versions and resident versions of the same course. That is learners learn as much using IVT as they do attending resident based versions of those courses; 2) Continue to provide instructional systems design support, timely satellite and downlink site

scheduling, and top quality broadcast support for our current customers; and 3) Aggressively market the advantages of IVT to those FAA business units and other government agencies that do not utilize this media for course delivery.

REFERENCES

1. Government Video Magazine Article, Distance Education/Teleconferencing, November 20, 1998, "Changing the Training Paradigms Can Offer Many Benefits", by Dr. Henry E. Payne
2. Delivering Technical Training to Advance Technical Skills: Interactive Video Teletraining in the Federal Aviation Administration, by Dr. Lynn W. Payne and Dr. Henry E. Payne